State of Utah

JON M. HUNTSMAN, JR.
Governor

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Lieutenant Governor

Department of
Environmental Quality

William J. Sinclair
Acting Executive Director

DIVISION OF AIR QUALITY
Cheryl Heying
Director

DAQE-IN0103700007-09

February 24, 2009

Greg Matthews
Fairchild Semiconductor Corporation
3333 W 9000 S
West Jordan, UT 84088

Dear Mr. Matthews:

Re: Intent to Approve: Modification to DAQE-AN0370005-06 by Removing the Activated Carbon System, Salt Lake County; CDS SM; Attainment Area, MACT (Part 63), NSPS (Part 60), Nonattainment or Maintenance Area, Synthetic minor
Project Number: N010370-0007

The attached document is the Intent to Approve for the above-referenced project. The Intent to Approve is subject to public review. Any comments received shall be considered before an Approval Order is issued. The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an Approval Order. An invoice will follow upon issuance of the final Approval Order.

Future correspondence on this Intent to Approve should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. The project engineer for this action is Tim Dejulis, who may be reached at (801) 536-4012.

Sincerely,

Ty L. Howard, Manager
New Source Review Section

TLH:TDJ:kw

cc: Salt Lake Valley Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE: Modification to DAQE-AN0370005-06 by Removing the Activated Carbon System

Prepared By: Tim Dejulis, Engineer
Phone: (801) 536-4012
Email: tdejulis@utah.gov

INTENT TO APPROVE NUMBER

DAQE-IN0103700007-09

Date: February 24, 2009

Semiconductor Wafer Manufacturing Facility

Source Contact:
Mr. Greg Matthews, Engineer
Phone: (801) 277-7048

Ty L. Howard, Manager
New Source Review Section
Utah Division of Air Quality

ABSTRACT

Fairchild Semiconductor Corporation (Fairchild) owner, and operator of the manufacturing plant located in West Jordan, Salt Lake County has requested permission to remove the activated carbon system that has controlled emissions from the waste solvent tanks. The activated carbon system was originally installed to satisfy the obligations contained in 40 CFR 264.1084 (RCRA Level 2 emission controls for hazardous waste tanks) and not specifically identified as a BACT requirement. Fairchild proposes to change the control of these tanks in order to satisfy RCRA Level 1 emission controls. While an additional 80 pounds per year of VOC will be emitted from the new equipment configuration, the plant-wide PTE and existing VOC limit will remain the same because of VOC emission reductions elsewhere in the plant. Fairchild's synthetic minor status will not change as a result of the above modification.

The changes in emissions will result in the following potential to emit totals, in tons per year:
PM_{10} = 19.76, NO_x = 51.39, SO_2 = 7.51, CO = 13.42, VOC = 59.13, HAPs = 13.00, NH_3 = 4.71

The NOI for the above-referenced project has been evaluated and has been found to be consistent with the requirements of UAC R307. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an AO by the Executive Secretary of the Utah Air Quality Board.

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notification of the intent to approve will be published in the Salt Lake Tribune and Desert News on February 28, 2009. During the public comment period the proposal and the evaluation of its impact on air quality will be available for the public to review and provide comment. If anyone so requests a public hearing, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and the hearing will be evaluated. The proposed conditions of the AO may be changed as a result of the comments received.

Name of Permittee:

Fairchild Semiconductor Corporation
3333 W 9000 S
West Jordan, UT 84088

Permitted Location:

Semiconductor Wafer Manufacturing Facility
3333 West 9000 South
West Jordan, UT 84088

UTM coordinates:418,000 m Easting, 4,493,300 m Northing
SIC code:3674 (Semiconductors & Related Devices)

Section I: GENERAL PROVISIONS

I.1 At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401]

I.2 The owner/operator shall comply with R307-150 Series. Inventories, Testing and Monitoring. [R307-150]

I.3 The owner/operator shall comply with UAC R307-107. General Requirements: Unavoidable Breakdowns. [R307-107]

I.4 Fairchild shall notify the Executive Secretary in writing when the removal of the activated carbon canister equipment items is complete and the reconfigured system is operational. To insure proper credit when notifying the Executive Secretary, send your correspondence to the Executive Secretary, attn: Compliance Section. If the construction and/or other modification is not complete within 18 months from the date of this AO, the Executive Secretary shall be notified in writing on the status of the construction and/or installation. At that time, the Executive Secretary shall require documentation of the continuous construction and/or installation of the operation and may revoke the AO. [R307-401-18]

I.5 All definitions, terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code (UAC) Rule 307 (R307) and Title 40 of the Code of Federal Regulations (40 CFR). Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]

I.6 The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]

I.7 Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401]

I.8 All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of two (2) years. [R307-150]

Section II: SPECIAL PROVISIONS

II.A The approved installations shall consist of the following equipment:

II.A.1 **Manufacturing Plant**
West Jordan Semiconductor Manufacturing Plant

II.A.3 **Boiler**
One (1) natural gas fueled boiler rated at six million Btu/hr

II.A.4 **Boilers**
Nine (9) natural gas fueled boilers rated at less than five million Btu/hr – each

II.A.5 **Power Generator**
One (1) diesel fueled generator engine rated at 140 kW

II.A.6 **Power Generators**
Two (2) diesel fueled generator engines rated at 250 kW – each

II.A.7 **Power Generators**
Three (3) diesel fueled generator engines rated at 350 kW – each

II.A.8 **Power Generators**
Two (2) diesel fueled generator engines rated at 400 kW – each

II.A.9 **Power Generator**
One (1) diesel fueled generator engine rated at 671 kW

II.A.10 **Semiconductor Manufacturing Equipment**
Layering Process

II.A.11 **Semiconductor Manufacturing Equipment**
Paterning Process

II.A.12 **Semiconductor Manufacturing Equipment**
Doping Process

II.A.13 **Semiconductor Manufacturing Equipment**
Etching Process

II.A.14 **Semiconductor Manufacturing Equipment**
Various Wet Chemical Sinks

II.A.15 **Semiconductor Manufacturing Equipment**
Various Spray Tools

II.A.16 **Semiconductor Manufacturing Equipment**
Various Chemical Baths

II.A.17 **Semiconductor Manufacturing Equipment**
Various Plating and Processing Tanks

II.A.18 **Wet Scrubbers**
Twelve (12) packed bed wet scrubbers

II.A.19 **Storage Silo**
One (1) storage silo with attached fabric filter baghouse

II.A.20 **Storage Tanks**
Two (2) waste solvent storage tanks, 4,800 gallon capacity – each

II.A.21 **Semiconductor Manufacturing Equipment**
Semiconductor Manufacturing Process Equipment: includes Semiconductor Manufacturing Equipment

II.B Requirements and Limitations

II.B.1.a All exhaust air from the storage silo shall be routed through the fabric filter baghouse before being vented to the atmosphere. [R307-401]

II.B.1.b All exhaust air from the semiconductor manufacturing production processes shall be routed through the wet scrubber network before being vented to the atmosphere. [R307-401]

II.B.1.c Visible emissions from the following emission points shall not exceed the following values:

A. All fabric filter baghouse exhaust stacks - 10% opacity
B. All wet scrubber exhaust stacks - 10% opacity
C. All boiler exhaust stacks - 10% opacity
D. All other points - 20% opacity

Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-309, R307-401]

II.B.1.d The following limit shall not be exceeded:

170,000,000 standard cubic feet of natural gas consumed per rolling 12-month period

To determine compliance with a rolling 12-month total the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Natural gas consumption shall be determined by examination of fuel supplier billing records. The records of natural gas consumption shall be kept on a monthly basis. [R307-401]

II.B.1.e Emergency generators shall be used for electricity producing operation only during the periods when electric power from the public utilities is interrupted, or for regular maintenance of the generators. Records documenting generator usage shall be kept in a log and they shall show the date the generator was used, the duration in hours of the generator usage, and the reason for each generator usage. [R307-401]

II.B.1.f The owner/operator shall use natural gas as primary fuel and #2 fuel oil as back-up fuel in the boilers listed in condition II.A. [R307-401]

II.B.1.g The owner/operator shall use #2 diesel fuel in the emergency generator engines. The sulfur content of any fuel oil or diesel burned shall not exceed:

0.5 percent by weight for fuel oils or diesel consumed in all emergency generator engines or boilers

The sulfur content shall be determined by ASTM Method D-4294-89, or USEPA approved equivalent. Certification of diesel fuels shall be either by Fairchild's own testing, or test reports from the fuel marketer. [R307-401, R307-203]

II.B.1.h The concentration of acidic HAP emissions above the wet sinks and spray tools shall be measured at least once every five years. Only sinks or spray tools containing HAPs need to be

tested. The values from previous testing will be used until the next tests are required. If new sinks or spray tools are added that contain the same chemical and temperature as those previously measured, the past emission rates will be used to estimate the new emissions (no new measurements are required until the next regular measurement date for all sinks or spray tools). If new acidic HAPs are added that do not match previous measurements of temperature and concentration, new measurements (chemical concentration, temperature, flow rate) will be made within 180 days of the change, and again at the next regular measurement date for all sinks and spray tools. Fairchild may use an alternate concentration measurement protocol, subject to approval by the Executive Secretary prior to implementation of any new protocol.

Emissions will be calculated as follows using the measured parameters:

Esink = C * F * H (dimensionally corrected to standard temperature and pressure)

where,

Esink is the wet sink or spray tool emission rate in tons per year

C is the measured concentration in parts-per-million (corrected for molecular weight, and unit dimensions). Concentration will be measured using a toxic gas detector, or suitable equivalent.

F is the measured flow rate in cubic feet per minute. Flow rate will be measured using a hot-wire anemometer, or suitable equivalent.

H is the recorded hours of operation of each sink during each company accounting period. [R307-401]

II.B.1.i The plant-wide emissions of VOCs and HAPs from the semiconductor manufacturing process, and associated operations (excluding these emissions from internal combustion engines) shall not exceed:

59.13 tons per rolling 12-month period for VOCs
9.90 tons per rolling 12-month period for any individual HAPs listed below: Hydrochloric acid, Hydrofluoric acid, Catechol, Chlorine, Arsine, Phosphine
13.00 tons per rolling 12-month period combined for all HAPs listed below: Hydrochloric acid, Hydrofluoric acid, Catechol, Chlorine, Arsine, Phosphine

Compliance with each limitation shall be determined on a rolling 12-Fairchild fiscal year accounting period. Based on the first day of each company accounting period, a new 12-accounting period total shall be calculated using data from the previous 12 company accounting periods.

The VOC or HAP emissions shall be determined by maintaining a record of VOC or HAP emitting materials used each fiscal accounting period. The record shall include the following data for each material used: [R307-401]

II.B.1.i.1 Name of the VOC or HAPs emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, toxics, isocyanates, and etc. [R307-401]

II.B.1.i.2 Density of each material used (pounds per gallon for liquids, pounds per cubic foot for gases). [R307-401]

II.B.1.i.3 Percent by weight of all VOC or HAP in each material used. [R307-401]

II.B.1.i.4 Gallons or cubic feet of each VOC or HAP emitting material used. [R307-401]

II.B.1.i.5 The amount of VOC or HAP emitted monthly by each material used shall be calculated by the following procedures:

Total VOC Emissions

VOC Emissions = Mt x Vratio x (dimensional corrections)
MT =the total amount of VOC usage (lbs) for the previous twelve company accounting periods.
VOCrate = the VOC emission rate (lbs/hr) measured during 2004 stack testing.
VOCuse = the VOC use rate (lbs/yr) during the source's fiscal company accounting year that VOC emissions were measured.
Vratio = (VOCrate x 8,760 hours per year) / VOCuse = 0.09
[R307-401]

II.B.1.i.6 **Total HAP Emissions**

T=D + A + L
T = the rolling twelve company accounting period plant HAP emission rate (tons/yr).
D = the sum of all rolling twelve company accounting period emission rates (tons/yr) for all HAP organic compounds.
A = the sum of all rolling twelve company accounting period emission rates (tons/yr) for all HAP acidic compounds.
L = the sum of all rolling twelve company accounting period emission rates (tons/yr) for all low usage HAPs. [R307-401]

II.B.1.i.7 **Organic HAP Emissions**

D = Mt x Vratio x (dimensional corrections)
MT =the total amount of organic HAP usage (lbs) for the previous twelve company accounting periods.
VOCrate = the VOC emission rate (lbs/hr) measured during 2004 testing.
VOCuse = the VOC use rate (lbs/yr) during the source's fiscal company accounting year that VOC emissions were measured.
Vratio = (VOCrate x 8,760 hours per year) / VOCuse = 0.09. [R307-401]

II.B.1.i.8 **Acidic HAP Emissions**
A = (Esinks + Mgas + Mbyproducts) / 2
A = the sum of all rolling twelve company accounting period emission rates (tons/yr) for all HAP acidic compounds
Esinks = the rolling twelve company accounting period sink emission rate (tons/yr) using the following formula:
Esinks = 3 ERsink

Mgas = the rolling twelve company accounting period mass (tons/yr) of HAP used in the gaseous form as calculated below. (Assumes most conservative case where all gas used is vented to the scrubber with none to the product).
Mbyproducts = the sum of all rolling twelve company accounting period masses (tons/yr) of all the HAPs formed from various chemical reactions that form acidic HAPs as calculated below:

By-Product Formation of HCl
(a) from BCl3, MW = 117.16, stoichiometric value = 3
(b) from Cl2, MW = 70.90, stoichiometric value = 2
(c) from SiH2Cl2, MW = 101, stoichiometric value = 2

By-Product Formation of HF
(d) from CHF3, MW = 70, stoichiometric value = 3
(e) from NF3, MW = 71, stoichiometric value = 3
(f) from BF3, MW = 67.80, stoichiometric value = 3
(g) from WF6, MW = 297.85, stoichiometric value = 6
(h) from CF4, MW = 88, stoichiometric value = 4
(i) from SF6, MW = 146, stoichiometric value = 6
(j) from C2F6, MW = 138, stoichiometric value = 6

X = Yusage x (MWX/MWY) x (the stoichiometric value for CL, or F in the molecular formula) x (dimensional conversions)
X = HCl (MW = 36.5) or HF (MW = 20)
Y = the chemical species (a) through (j) in the list above

Any chemical compound not listed above intended for use in Fairchild's manufacturing process that results in the by-product formation of HCl or HF may be used, and emissions shall be estimated with that chemical's molecular weight and stoichiometry as shown above. [R307-401]

II.B.1.i.9 **Low Use HAP Emissions**

L = 3 UHAP
L = the rolling twelve company accounting period emission rate (tons/year) for all low usage HAPs.

UHAP = the sum of all HAPs used during the company accounting period for those compounds with less than 1,000 lbs/yr of individual compound use, determined as follows:

HAP = % HAP by Weight / 100 x [Density] x Gallon or ft3 Consumed x 1 ton / 2000 lbs

Density in pounds per gallon for liquids, pounds per cubic foot for gases. [R307-401]

II.B.1.i.10 The amount of VOC, or HAP emitted each company accounting period from all materials used. [R307-401]

II.B.1.i.11 The amount of VOCs, or HAPs reclaimed for each company accounting period shall be similarly quantified and subtracted from the quantities calculated above to provide the monthly total VOC, or HAP emissions. [R307-401-1]

Section III: APPLICABLE FEDERAL REQUIREMENTS

In addition to the requirements of this AO, all applicable provisions of the following federal programs have been found to apply to this installation. This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307.

PERMIT HISTORY

The final AO will be based on the following documents:

Is Derived From	Original NOI dated September 24, 2008
Supersedes	DAQE-AN0370005-06 dated May 25, 2006

ACRONYMS

The following lists commonly used acronyms and their associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
ATT	Attainment Area
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CO	Carbon monoxide
COM	Continuous opacity monitor
DAQ	Division of Air Quality (typically interchangeable with UDAQ)
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
MACT	Maximum Achievable Control Technology
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality (typically interchangeable with DAQ)
VOC	Volatile organic compounds